PHOTOELECTRON SATELLITES AND ANGULAR DISTRIBUTION ASYMMETRY PARAMETERS OF ARGON ATOM STUDIED USING HHG EUV LIGHT[a]

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We have investigated the photoelectron properties of argon atom in the photon energy range near photoionization threshold, employing a reaction microscope and a newly-built HHG-based EUV laser system. Photoelectron spectra and angular distribution were obtained through momentum imaging for photoelectrons. Seven satellites were resolved besides the 3s and 3p main lines. The asymmetry parameters β were determined for both the main lines and the satellites. It is found that our measured β for the 3p and 3s main lines are in an excellent agreement with previous results reported by Houlgate et al. [1], Dehmer et al. [2], Adam et al. [3], which demonstrates the reliability of the new system and the data analysis procedure. Furthermore, by analyzing the angular distribution of quasi-degenerate satellites, the branch ratio was obtained, which accord closely with theoretical value. The β parameters measured for the satellites are reported for the first time in this energy range, providing benchmark data for testing different theoretical models.

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